KENT'S TWENTIETH-CENTURY MILITARY AND CIVIL DEFENCES. PART 2 – MEDWAY

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Part 1 of the report on the *Defence of Kent Project's* study of the county's twentieth century military and civil defences concerned the findings from Kent Thameside. Part 2 presents and discusses the findings from the Medway district made by Keith and Edmund Gulvin, Mark Gibson and Gerd Hoad, with additional research and discovery by the writer. This involves an overview of 1601 sites, of which an initial 217 surveyors' summaries are now available for viewing on the on-line Kent Historic Environment Record (www.kent.gov.uk/HER). The rationale for the Defence of Kent Project and a description of the context for county's defences may be found in Part 1.[1]

Boundaries and transport links

Medway District centres on the winding course of the river Medway which cuts through the chalk uplands of the North Downs and flows through marshes on either side of its lower reaches to join with the Thames. The district occupies an area of about 100 square miles and is coterminous with the Medway Unitary Authority, formed in 1998 **(Fig. 1).** It is bounded to the north by the Thames, to the south by the areas administered by Tonbridge and Malling and Maidstone Borough Councils, to the east by that of Swale Borough Council and to the west by that of Gravesham Borough Council.

The district entered the twentieth century with a developed and still developing infrastructure of roads and railways, of use not only for the movement of defenders but potentially for the advance of an invader. Chief among the roads was the Watling Street (improved and re-established as the A2 in the 1920s) which connected London with the Kent coast over a bridge crossing the Medway at Rochester. This road also provided the historic spine of the conurbation between Strood and Gillingham. To the north the enlarging Chatham Dockyard had, since the eighteenth century, done much for local economic and urban growth. Other roads connected

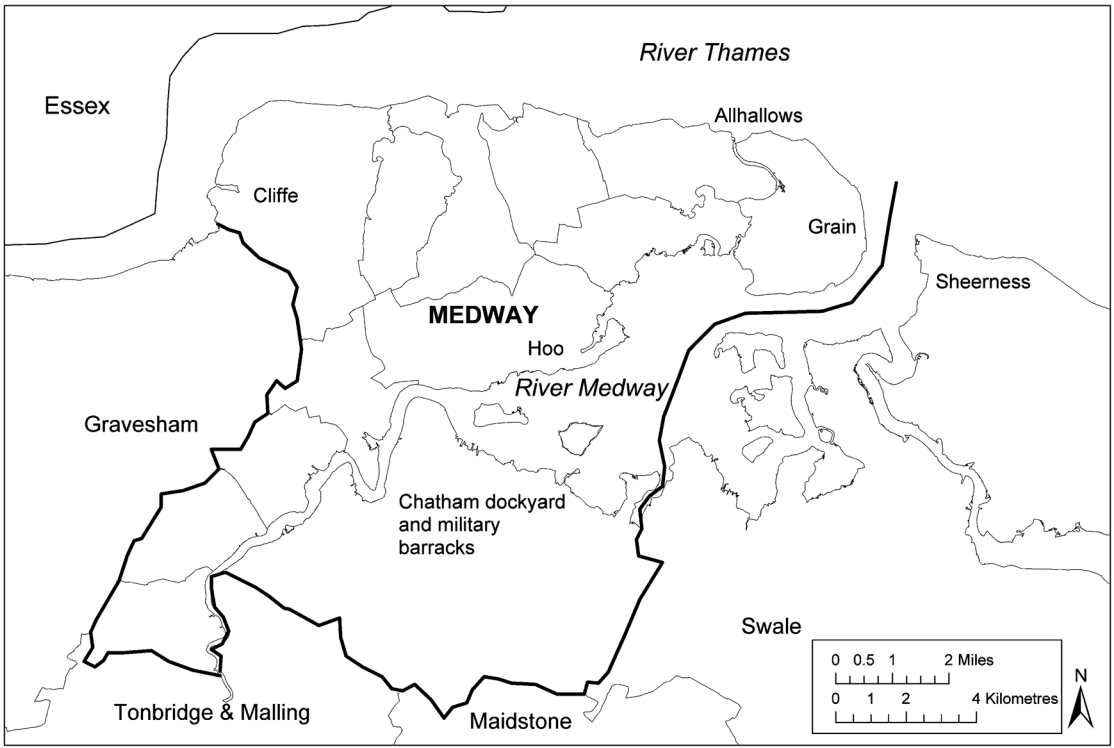

Fig. 1 The boundaries of Medway District (V. Smith and P. Cuming 2010).

from the river crossing north to Cliffe, Allhallows, Grain and Hoo and south to Maidstone, West Malling and other destinations. A main railway line between London and east Kent ran through the district and crossed the Medway over a second bridge at Rochester. Other lines were along the left bank of the river connecting Strood with Maidstone and beyond as well as with Swanley and London. A further line ran across the district from Shorne in Gravesham to Grain and, from 1932 until 1961, a spur from this terminated at Allhallows. The 1960s saw the building of the M2 motorway through the district, and the twenty-first century, a bypass at Wainscott, and the Channel Tunnel Rail Link.

Strategic significance

The river Medway and the importance of the access from it to the North Sea and the English Channel was the key to the strategic significance of the district. It was this which gave rise to the creation of two nationally important naval bases: one within the district at Chatham and the other at Sheerness, with their requisite ammunition and coaling stores, construction and repair yards, anchorages for warships, protective fortifications and military barracks. Over time Chatham also emerged as an important centre for military training.

As well as the river providing a convenient base for naval striking forces against an enemy at a distance in the country's eastern waters, local naval units were well placed to defend against a close attack by enemy warships on the Medway and its strategic assets or against the Thames and the Port of London. With advances in artillery, by the start of the twentieth century shore guns at the mouth of the Medway could fire upon enemy targets in the western parts of the widening Thames estuary. This ability increased with further improvements in the range of guns and with the embracing of the training battery at Shoeburyness, able to fire across from the Essex shore, and forming part of the order of battle for the Thames. An additional strategic factor for the district was the importance of the earlier-mentioned lower river crossing at Rochester, carrying the road and rail communications to and from London.[2]

The area of land bordered and enclosed by the Thames and Medway, and known as the Hoo Peninsula, divides the entrances to these rivers. Although this was a possible place of debarkment for an invader intent on outflanking the defences of these rivers by a surprise attack, mud banks and areas of low water rendered a landing at other than at high tide difficult. The marshy littoral was also less than ideal for the entry of substantial forces and their equipment. However, where higher and drier ground reached down to or near to the shore at Allhallows and Grain there were landing vulnerabilities. Inland a defender could occupy the rising ground as positions of resistance.

Chatham dockyard had a growing importance as an industrial complex in its own right but there was also civil industry in the Rochester-Chatham-Gillingham area, in the form of engineering, cement manufacture, chemical production, printing and brickworks. The naval presence in the Medway remained until the closure of the dockyard at Sheerness in 1960 and at Chatham until 1984 but a military one has continued.

FINDINGS

Before the First World War 1900-13

Naval and shore-based river defence (**Fig. 2**)

With its massive dockyard and naval base, Chatham entered the twentieth century as a major centre for naval warship construction and refitting. This had been facilitated by the creation of enhanced facilities when the dockyard had been extended into St Mary's Island in the 1860s and 70s to meet the needs of the new navy of steam ironclads, chiefly being expanded to meet the perceived challenge of France. A large new dock was added at Chatham in 1900. Across the Medway at Lodge Hill and Chattenden capacious naval ammunition stores for supply of the fleet were built towards the end of the nineteenth century, with a rail connection to Upnor on the riverside where there were other related facilities. Chatham built the latest warship designs. Yet at the point of its greatest success its facilities and capacity began to be challenged by the needs of the increased size of pre-Dreadnought battleships. The launch elsewhere of the first of the new Dreadnoughts in 1906, a class of warship considered too large for Chatham, with its insufficient water depths and other difficulties, meant the end of battleship construction there.[3] But the future of the dockyard was assured by its place in the early construction of submarines, added to which was the building and refitting of cruisers and smaller vessels. The importance of Chatham had been underscored by the building of the Pembroke naval barracks for nearly 5,000 ratings between 1897-1903, making it one of three main national naval accommodation centres for the fleet. Linked with this was a new and extensive naval hospital built outside the dockyard at Gillingham. The gradual introduction of oil as a fuel for steamships led to the building of a major complex of oil storage tanks downstream at Grain.

Although challenged by demolitions, the extensive signature of the Chatham dockyard and naval base remains. The Lodge Hill ammunition store, with its encircling Dacoit fence, is gradually being eliminated by pre-development clearance but the Chattenden store survives, as do some structures at Upnor and parts of the embankment of a connecting railway.[4]

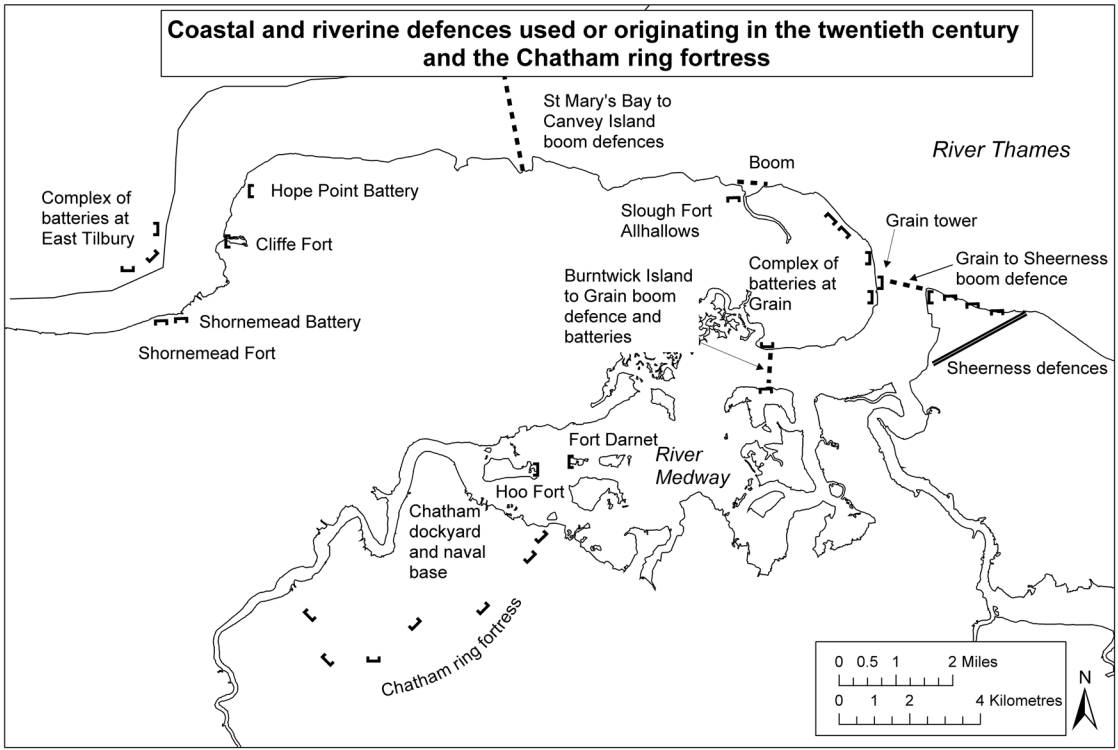
Coastal and riverine defences used or originating in the twentieth century and the Chatham ring fortress
St Mary's Bay to Canvey Island boom defences
River Thames
Boom
Complex of batteries at East Tilbury
Hope Point Battery
Cliffe Fort
Slough Fort Allhallows
Grain tower
Grain to Sheerness boom defence
Burntwick Island to Grain boom defence and batteries
Complex of batteries at Grain
Shornemead Battery
Shornemead Fort
Sheerness defences
Fort Darnet
River Medway
Hoo Fort
Chatham dockyard and naval base
Chatham ring fortress
0 0.5 1 2 Miles
0 1 2 4 Kilometres
N

Fig. 2 Map of the coastal and riverine defences used or originating in the twentieth century and the Chatham ring fortress (V. Smith and P. Cuming 2010).

After the Entente with France in 1904, Germany emerged as a more likely future enemy and possible attacker. Behind the first line of defence represented by the fleet were the shore-mounted anti-ship guns, now including the new long-range breech-loaders. At Grain and Sheerness these crossed their fire to defend the dockyard at the latter and the Medway river approaches to Chatham Dockyard. A battery at Slough Fort, Allhallows, supported these guns.[5] Yet even in 1900 there remained a presence of obsolete rifled muzzle-loaders from the 1860s and 70s at Grain and Sheerness and in Medway's inner line of defence at Hoo and Darnet forts.[6] Some muzzle-loading guns were also present in the defences of the Thames at Cliffe, Shornemead, Gravesend, Tilbury and East Tilbury where, in varying degrees and for various purposes, they had recently been, or were being, supplemented by breech-loading guns. All rifled muzzle-loaders were soon withdrawn from the Medway and Thames as from elsewhere.[7]

As well as guns to counter long-range fire from enemy warships the Medway had boom defences against attack by torpedo boats between Grain Tower and Sheerness and, upstream, between Burntwick Island and South Grain. These were defended by light 12-pr. quick firing guns assisted by searchlights for night firing.[8] There were other similar guns with lights at the Examination Battery on the Thames at Lower Hope Point **(Fig. 3)** At both Cliffe Fort and Garrison Point Fort at Sheerness the wire-guided Brennan torpedo stations introduced in the 1890s had

Fig. 3 The concrete bases of Hope Point Battery (V. Smith 1971).

Fig. 4 The later infilled western launching bay of the Brennan torpedo station at Cliffe Fort (1957).

been continued into the first few years of the twentieth century **(Fig. 4).** There were, besides, arrangements for seeding the channels of both rivers with contact mines as well as observation mines, which could be fired electrically from the shore when an enemy warship was seen to pass over them. In the narrowing Thames the main minefield was off Cliffe Fort, and was also defended by 12-pr. quick-firers and searchlights. Whether for long-range fire or close defence the new breech-loaders were mounted in new-style low profile concrete emplacements either on the roofs of pre-existing forts or in detached batteries. Their types varied from 12-pr., 4.7-in. guns for close defence to 6-in., 9.2-in., and 10-in. weapons for longer-range firing and for counter-bombardment, the latter three calibres having ranges of up to 7 miles.[9]

These arrangements were soon to be shaken by the fundamental review of the nation's coastal defences by the Owen Committee in 1905. This relied heavily on the Admiralty's views of the nature and probability of naval attack on the coast in a future war. The committee concluded that with the armaments in place at Sheerness (and Grain) the port of London was almost secure from attack 'under modern conditions'. This set the tone for a discontinuation of the inner line armaments of the Thames at Gravesend, Tilbury, Shornemead, Cliffe and Lower Hope, with reductions

at East Tilbury and non-replacement of the guns at Hoo and Darnet forts in the Medway. Above Sea Reach only Coalhouse Fort in the Thames was retained, reliance being placed on a concentration of the long-range heavy guns downstream at Allhallows, Grain and Sheerness. This expressed the potency of the more powerful breech-loaders in the outer line, which could defend the approaches to both rivers at long range.[10]

Despite the move to these changes, much of the overall objective of a defence plan for the Medway and the Thames of 1904 still held good. This was to counter all predicted types of attack, including shore bombardment by armoured cruisers and perhaps by heavier vessels, naval penetration by the new fast torpedo boats into the Medway/Thames and landings at Allhallows and Grain, whether as part of a full-scale invasion or as a raid in force to capture and destroy Chatham dockyard and the ammunition stores at Chattenden and Lodge Hill. Formations of troops were allocated to oppose landing forces. For their movement, full use was to be made of the roads and railways, where conveniently existing, for internal lines of communication. Mobile artillery was to be positioned at Grain, Allhallows and on the high ground at Halstow.[11]

Defending against a land attack on Chatham dockyard from the south or east, was an arc of seven forts and redoubts – Forts Borstal, Bridgewoods, Horsted, Luton and Darland as well as the Grange and Woodlands redoubts, built in the last quarter of the nineteenth century. Fort Darland was the last constructed in 1899, and modified in 1902. These works had been conceived in the 1860s for the mounting of fixed guns, like the ring fortresses to landward of Portsmouth and Plymouth. But within several years of the start of construction in 1875 of the first four of the forts (Borstal, Bridgewoods, Horsted and Luton), shortage of funds led to a temporary suspension of work. Fortuitously, this allowed rapidly advancing military technology and new tactical practice to catch up with the fortress programme. Without unaffordable armoured protection, fixed heavy guns were now vulnerable to increasingly more powerful and accurate modern artillery, so when work resumed in the 1880s, the fortress came to embrace a new strategy for mobility and the dispersal of artillery. Under this approach much of the defensive artillery was to be concealed in fieldworks between the forts, often in an indirect-fire mode, with the addition of rapid-fire rifles and machine guns in positions protected with barbed wire.[12] The forts themselves came to be utilised mainly as infantry redoubts which were to be provided with light mobile artillery, to be moved to other positions as tactical exigencies demanded. Ramps to the ramparts of Forts Borstal, Bridgewoods, Horsted and Luton, gave access for moveable guns. Having been started later, Fort Darland and the Grange and Woodlands redoubts were, from the start, of a more modern design, in better keeping with the new doctrine. The latter was more fully expressed in the London defence scheme of the 1890s.[13]

At Chatham the Royal Engineers were responsible, among other things, for ensuring the army's competence in fortification and siege warfare. As a training exercise, in 1907 they undertook the mining assault of Forts Bridgewoods and Luton, the damage to their structures being afterwards repaired.[14] Yet in the same year an apparent optimism about the ability of the navy to prevent an invasion helped persuade the Ruck Committee to commend the gradual disposal of the fortress lands at Chatham, Portsmouth and Plymouth. By 1911, however, the Franklyn Committee called for the overturning of that commendation because of 'certain marked alterations in the accepted defence policy'.[15]

Of the district's seaward-facing defences, the ramparts, ditches and other traces of the works at Grain (**Fig. 5**), together with Grain Tower, the anchor point of the boom defence to Sheerness, as well as the gun bases, searchlight cells and the accommodation block of the south boom battery on Burntwick Island, may still be seen, as also the roof positions and some traces of the flanking heavy batteries at Slough Fort, Allhallows.[16] At Cliffe Fort one of a pair of launching bays for the Brennan torpedo is visible, together with the gun emplacements from this period. At Hope Point Battery little survives other than the concrete gun bases for the battery superstructure. These are being eroded by the tides. Of Chatham's land front defences, Forts Borstal, Horsted and Luton survive, with traces of Fort Darland in a housing estate and the ditches and casemates of the Grange and Woodlands redoubts in orchards at Twydall.[17]

Chatham's military and marine garrison was accommodated within pre-existing barracks, established at various dates: Brompton (added to after Second World War), Chatham infantry (later called Kitchener Barracks), South Hill, St Mary's, Royal Marines Barracks and Chattenden (replaced with new barracks after the Second World War). Only Brompton and part of Kitchener Barracks survive. As part of the regular establishment there were military hospitals and prisons.[18]

The public expression of home defence was in the form of the volunteer movement, based in several drill halls and headquarters established in New Road and Albany Terrace, Chatham and in Garden Street and Trafalgar Street, Gillingham.[19]

The First World War, 1914-18

River and anti-invasion defence

The war with Germany was Britain's first conflict with a European state in a century. It threatened at the least naval bombardment of the British coast and at worst the possibility of invasion. Actual war and the painful experience of the sinking of three British cruisers by a single German U-boat in September 1914, raised uncertainties in the Defence Committee

Fig. 5 Aerial view of Grain Fort (lower) and the wing battery (upper) (KCC 2000).

about the efficacy of the surface fleet and emphasised a continuing need for enhanced second-line defences on land.[20]

Behind the British Grand Fleet were local naval forces, including those based in the Medway, consisting of coastal defence vessels, cruisers, destroyers and submarines, available to deploy to the waters of the Nore to oppose the advance of an enemy fleet against the Medway and the Thames. Chatham dockyard saw a massive expansion of activity and

of its workforce with both the building and refitting of warships. The magazines at Lodge Hill and Chattenden as well as the facilities at Upnor received enhanced use.[21]

Coastal defence was based on the earlier-mounted and pre-existing groupings of artillery batteries described in a defence plan of 1914 but these were reorganised and enhanced.[22] The guns of the training range at Shoeburyness were now added to the Thames defences. At Grain the wing battery had been disarmed but the other batteries were unchanged, although 2 x 6-in. guns had been removed from Slough Fort, leaving just its 9.2-in. guns on barbette mountings in rebuilt and re-aligned emplacements. By 1917 the remaining 9.2-in. guns at Slough Fort were transferred to the new Fletcher Battery on the Isle of Sheppey, further emphasising the concentration of defensive firepower downstream. In the narrowing Thames, this left only 2 x 6-inch guns each at Coalhouse Fort and at Cliffe Fort, which had been rearmed in 1916, to form an inner line of defence.[23] At Grain a new battery for 2 x 6-in. guns was added in 1917-18 at Whitehall Farm. At the beginning of the war the boom defence had been put in place between Grain Tower and Garrison Point at Sheerness, having a fixed timber section between Grain Tower and the shore at Grain. Another obstacle is said to have been placed across the Thames from St Mary's Bay.[24]

As well as projecting counter fire against battleships and cruisers, all these guns could be used in an anti-invasion role against the approach of landing vessels. The infantry element of the anti-invasion defences reflected the age of the rifle, the machine gun, the spade and barbed wire, and took the form of trench systems with pillboxes, wire entanglements and fire positions for field and other artillery as well as emplacements for machine guns. At Grain such defences were along the river front and in the intervals and flanks of the forts and batteries. There were similar, more modest systems for close defence of Slough Fort and perhaps of Cliffe, both occupied during the war. The defensive possibilities of the rising ground occupying the centre of the Hoo Peninsula had long been recognised.[25] Perhaps its north- and east-facing slopes were entrenched and evidence for this might be sought (K. Gulvin, pers. Comm., 2008). Certainly there were trench systems and redoubts north of the Ratcliffe Highway in the vicinity of the Lodge Hill and Chattenden naval ammunition stores where there is some field evidence, including small concrete pillboxes or sentry posts at the angles of their enclosing dacoit fences.[26] These seem to be of a design distinctive to the Medway area. Other such sentry posts were built at Chatham Dockyard. At Chatham and Gillingham the land approaches to the dockyard and the military barracks from the south and east were defended by trench systems between, and immediately in front of, the works of the ring fortress. Some 4 miles east, and within Swale District, a major entrenched stop line was established between the Swale

and the ground to the north of Maidstone, of which several small concrete pillboxes survive, partly visible on the west side of the A249 road. This line was intended to oppose an enemy advance west towards London from a landing on the Kent coast.[27] In support of this were 4 pairs of 6-in. guns in emplacements between Upchurch and Boxley, with structural evidence at Gore Farm and Matts Hill.[28] There are possible traces of trenches from this period on Blue Bell Hill.[29] Although details are at present uncertain, there may have been a connecting stop line joining Halling to Knockholt, as part of the reactivated London Defence Positions.[30]

The effectiveness of anti-ship and anti-invasion defence was, of course, dependent upon good communications and command and control. Alongside traditional methods of communication such as semaphore flags, riders and runners, there was an increased use of the telephone and, gradually, the employment of the emergent wireless technology. The needs of ship to shore communication saw the start of the provision of wireless stations as well as a continuation of flag signalling.

Air defence **(Fig. 6)**

The new threat of attack from the air by airships and aeroplanes required innovative approaches to defence. As key air targets, the ammunition stores at Lodge Hill and Chattenden were provided with anti-aircraft guns as, also, was Chatham dockyard itself. Over time, a considered scheme of air defence evolved leading, by 1917, to the Medway district coming within the London Air Defence Area, controlled from a command post in London. This had radial belts of gun and fighter defences and balloon barrages to protect the air approaches to the capital. Medway district was also within a limb of gun defences, which extended north from Chatham to the River Blackwater in Essex. Air defence increasingly used telephone and wireless for rapid communications, especially necessary to handle the speed of air attack.[31]

Anti-aircraft batteries

Perhaps the first anti-aircraft gun battery in Britain, for two guns, and with surrounding accommodation and administrative buildings, was built at Lodge Hill in late 1913 or early 1914. A contemporary or similar-dated anti-aircraft battery at Beacon Hill is lost to sight but a blockhouse apparently part of it survives on a probable earlier beacon mound.[32] The surviving emplacements at Lodge Hill appear to have been influenced by the design for coastal batteries. By 1915-16, the district had gained a proliferation of anti-aircraft batteries, which are listed under the names of their area groupings:[33]

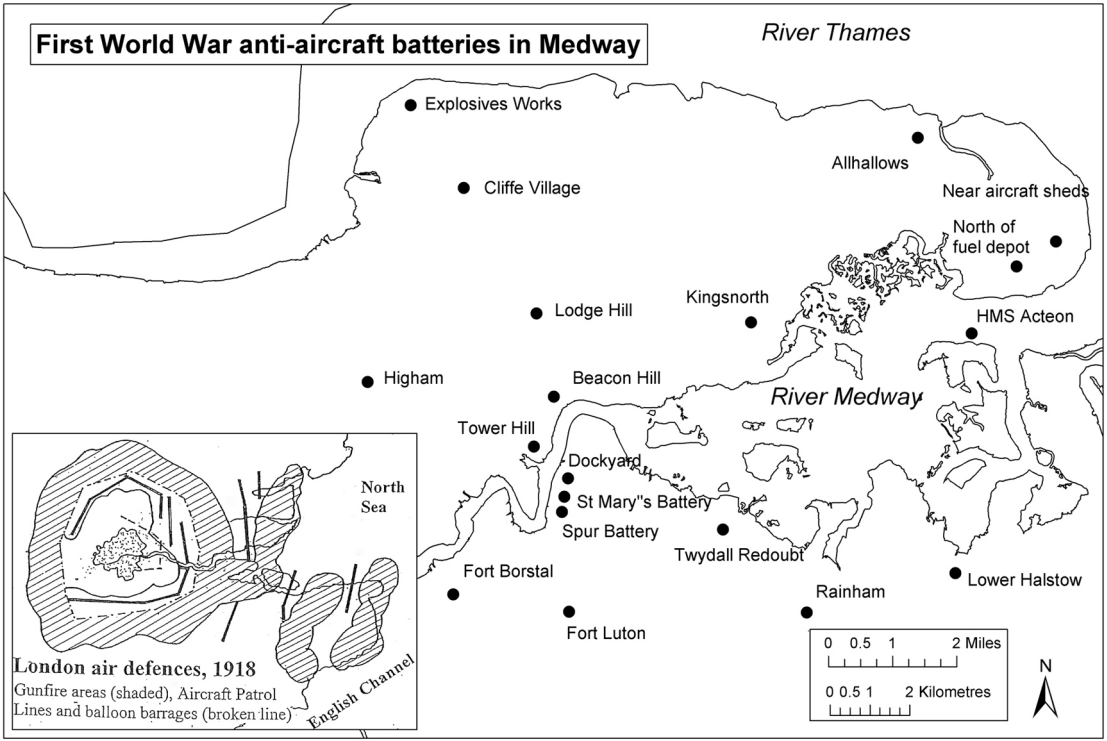

Fig. 6 Map of the First World War anti-aircraft batteries in Medway District (V. Smith and P. Cuming 2010).

Chatham: Detention Quarters Hill, the dockyard, Tower Hill, Lodge Hill, Beacon Hill, St. Mary's Battery, Kingsnorth, Twydall Redoubt
Grain: Near aircraft sheds
Port Victoria: north of fuel depot, Burntwick Island, on HMS Actaeon
Fort Amherst: Spur Battery, Rainham, Lower Halstow, Fort Luton, Fort Borstal
Cliffe: Cliffe village, explosives works and Allhallows.

In total there were 40 guns, varying from 1-pr., 6-pr. and 3-in. weapons, with many searchlights. From their positions they provided point defence for vulnerable places close by and, to some extent, wider defence by the potential of the distribution of weapons to cover an area of sky.

Aviation and fighter defence

A Royal Naval Air Station at Kingsnorth, near Hoo St. Werburgh, originated shortly before the outbreak of the First World War and became a nationally important centre for the design, development, trialling and manufacture of airships, particularly the coastal patrol type.[34] It had factory areas, accommodation huts, large retorts for storage of gas to inflate airships and two giant airship sheds, all protected by anti-aircraft guns and pillboxes. Patrol sorties of the Thames estuary and of the English Channel appear to have been mounted from this site. Additionally, it had an important role in the training of airship crews. The site also had a landing ground for aircraft. Following abandonment in 1919 and removal of structures and demolitions, there is now little left but one of its hangars, dismantled in the 1920s, is in use as a barn at Moat Farm, St. Mary Hoo. Another RNAS was commissioned at Grain in 1912, chiefly as a place where trials of seaplanes could be undertaken.[35] By 1915 it was the base of the Sea Plane Test Flight and an Experimental Armaments Section. This centre of experimentation was provided with hangars, slipways and other buildings. Its aircraft carried out anti-Zeppelin patrols in the Thames estuary and, in theory, could have provided air defence for the naval bases at Sheerness and Chatham supported by fighter protection from an airfield at Eastchurch (Sheppey). Grain RNAS was discontinued in 1924; there are only slight remains. At Rochester, Messrs Shorts had begun construction of seaplanes in 1914.[36]

Some civil defence was provided in the district in the utilisation of cellars in the civil community as air raid shelters and of other premises in the dockyard and the military establishments.[37] There were ground observation posts, air raid sirens and ways to diminish or eliminate lighting seen from the air at night. As expected, the dockyard attracted some air raiding, notably on 17 September 1917, when a bomb struck Pembroke Barracks and killed 136 sailors. Other bombs fell on Chatham Lines and

on the town of Chatham but did not seriously disrupt key dockyard or industrial operations.[38]

Chatham became an important centre for the training of troops destined for the Western Front. There were outlying practice areas for trench and tunnel warfare at Chattenden and Darland (Gillingham) where there is a crater from the practice explosion of an attack mine. The area in front of Chatham Lines became a tented camp and parts of the Inner Lines gained accommodation huts, supplementing pre-existing barracks. The importance of the earlier-established Curtis and Harvey explosives factory on Cliffe Marshes increased from the demands of the war. Many storage magazines, with others at St. Mary's Bay, may still be seen. One of the last significant wartime additions within the district was the Yantlet Range, established on the eastern side of Yantlet Creek at Grain in 1918, for the testing of heavy guns. There are remains of two concrete firing points, the bases of velocity towers and of a dock for landing of the guns to be tested.[39] The guns were aimed across the Thames, the projectiles landing on the mudflats at Shoeburyness.

Interwar years 1919-39

Disarmament and decommissioning followed the end of the First World War. This was keenly felt in the dockyard where there were greatly reduced workloads. Numerous paid off naval vessels were to be seen moored in the Medway awaiting transfer to a scrapyard. A large number of guns were removed from such vessels and placed into store.[40]

Coastal defences were retained against a purely theoretical and notional enemy, France, but at a lesser scale, with 2 x 9.2-in. guns at Grain Fort, 3 x 6-in. at Grain Battery and 2 x 6-in. at Whitehall Farm Battery, the Wing Batteries and Grain Tower having been disarmed. Six-in. guns were maintained at Cliffe and Coalhouse Forts respectively for the Thames inner line; anti-aircraft gun defence was almost abandoned.[41]

In 1923 the Medway was embraced by an updated London Air Defence Area, largely a paper scheme, within which Chatham was to come within London's outer artillery zone and partly within a zone of advanced observation posts.

The General Strike of 1926 led to sailors from Chatham Dockyard being deployed to other ports to ensure their continued operation. The civilian staff of the dockyard did not take industrial action and operations there were little interrupted. With the Depression came drastically reduced orders for new warships and redundancies. The dockyard went into decline, closure seeming possible.[42]

Contingency planning for coastal defence continued. The Thames and Medway Interim Defence Scheme of 1934 described the area to be defended as the entrance from the North Sea to the Thames and Medway, giving

access to Tilbury and London and to Sheerness and Chatham. Enemy vessels west of a line between Herne Bay and Foulness were considered to be within range of the guns on Sheppey, Grain and Shoeburyness. There were to be renewed boom defences in war. The types of attack envisaged were bombardment by cruisers and destroyers, with the firing of torpedoes from coastal motorboats and perhaps by submarines, although the latter would have been unlikely to be able to go further west than Southend and Sheerness because of the reducing depths of water. Minelaying and bombing from the air was expected and numerous possible targets were identified, including oil depots, wireless stations, naval and merchant convoy anchorages and the naval bases themselves. Guns already in position were expected to be able to handle the various forms of surface attack. Landing attack was to be handled by local forces, reinforced if necessary by central reserves. Systems of tactical communication were in being. The report, probably started in 1933, discussed attack distances not only from Germany but from the French coast (e.g. from Dunkirk) but the latter can only have been in theoretical terms.[43]

The threat of Germany predominated after 1934. In consequence Chatham dockyard began to receive a new lease of life, seen in the construction of surface ships and submarines and the refitting of existing naval vessels. As in the First World War, the Medway was envisaged as a base for naval patrols of the North Sea.[44]

The sense of a German threat also gave a stimulus to air defence, to provide new gun defences and, of special relevance to Chatham, to again upgrade planning for London's air defence. With this was a need for expanded trained manpower through enlargement of the Territorial Army to operate guns and searchlights.[45] Within the district specialist units for this were formed at Fort Clarence, Rochester, at Hoath Lane, Gillingham and at Grain.[46] Ground observation posts were established in 1937 at Snodland and Hoo and during 1938 at Allhallows and Cliffe, all reporting to a control centre for coordination of fighter and gun defence.[47] Some 23 sites were chosen for anti-aircraft gun batteries to form a Thames and Medway Gun defended Area. These were to mount the new 3.7-in. and 4.5-in. guns. Among them 7 sites were within the Medway District, at Twydall, Fort Borstal, Tower Hill, Grain, Slough, Fenn Street and Oak Street.[48] Borstal survives entire, with some elements of several of the other batteries. The new-style layouts for anti-aircraft batteries and their place in the command structure are mentioned in general terms in Part 1. Work on constructing these batteries soon began.

Parallel with this was the creation of civil defence. Under Kent County Council, the authorities then constituting the present Medway Council were Strood Rural District (part), Rochester, Chatham and Gillingham Municipal Boroughs, as well as part of Swale Rural District.[49] These were asked to plan protective measures for their communities. The general

scope of typical measures for civil defence is described for Thameside in Part 1. An additional element was planning by the services for passive defence for the naval base at Chatham and the military barracks.[50]

The Munich Crisis 1938, and the months leading to the outbreak of War

The Munich Crisis in the autumn of 1938 gave rise to emergency military and civil defence measures, followed by more extensive longer-term action, which is discussed in general in Part 1. Within Medway district this saw the establishment of some public air raid shelters in open spaces not far from housing or near town centres.[51] The hurried arming of the anti-aircraft batteries was mainly with the older 3-in. weapons, the new types not yet being available for all sites.[52] Concurrently was the start of the establishment of a well-planned civil defence infrastructure, administered by the councils' new Air Raid Precautions and Emergency committees.[53] Command and control were handled by new telephone-equipped control centres, including at Hollywood House at Strood and the basements of Rochester and Chatham town halls,[54] with air raid warden posts as reporting centres in the community, first aid and fire action posts and an organisation for rescue, repair and gas decontamination. For people who were bombed-out, premises were designated as Rest Centres and Emergency Feeding Centres.[55] Further shelters were made and surveys were carried out for more. An Air Raid Precautions map for Kent of April, 1939, identified Medway district as having a high vulnerability to air bombing and rated the conurbations of Rochester, Chatham and Gillingham, next to the naval base and military areas, as having priority for shelter protection.[56] As well as for the protection of civilians, considerable attention was placed on the need to provide shelters within Chatham Dockyard (including deep shelters), and at the naval and the military barracks, leaving a structural legacy. The basing of operations for testing and manufacturing of aircraft by Messrs Shorts at the new airfield at Rochester in 1934, supplementing their existing seaplane factory on the Rochester esplanade added value to the Medway district as a target for air bombing. The experience of bombing during the First World War is said to have had some influence on shelter planning, from the memory of the heavy loss of life from the attack on Pembroke Barracks.[57]

The Second World War: the beleaguered years 1939-41

Expressing a pre-occupation with the threat of attack from the air, the evacuation of children from the Medway Towns took place in the first few days of the Second World War.[58] As elsewhere, civil defence was strengthened, the Medway Towns becoming a 'Blitzmerge' area. This was part of a package, involving planning cooperation between the towns

and civil agencies, mutual assistance and arrangements for reinforcement by civil defence forces from outside, should this become necessary.[59] Improvement of command and control saw the building of a surface blockhouse in a chalk pit at Strood and of a surface control centre at Gillingham.[60] An important new feature was the creation of a Medway Group Control in tunnels at Fort Amherst at Chatham. This over-arching command for service and civilian areas derived from the presence of air targets at the naval and military facilities at Chatham and Sheerness. Originally with a wider geographic remit, this was reduced to comprise the Medway Towns, part of Strood Rural District and the whole of the Isle of Sheppey.[61] This control has been historically restored by the Fort Amherst and Lines Trust. A large, since demolished, civil defence depot was added on Strood Hill. Fire services were expanded, with additional action stations, and emergency water supplies, memorialised in surviving painted signs, for example at Chatham Lines, Sun Pier Chambers, Chatham, on a wall at King's School, Rochester and on a bridge next to Gillingham railway station.[62]

The air raid siren and wardens post network was enlarged, with greater provision of purpose- built premises, typically the ubiquitous concrete or brick rectangular and flat roofed blockhouses. The number of Rest Centres and Emergency Feeding Centres was increased, with over 60 of them in the Medway Towns, mostly at schools and community halls. Emergency mortuaries were established for those killed during bombing, one surviving at the retained fire station at Hoo. Massive underground tunnel shelter complexes capable of containing many people from the Medway Towns were proposed by the local councils but on cost grounds were not provided. Depending upon the terrain, liability to flooding and local circumstances, there were covered trench shelters and brick surface shelters close to communities as well as shelters of opportunity in the basements of shops and other premises in town centres for people caught away from home during a raid. Prefabricated corrugated iron Anderson shelters were provided to many households on a cost basis or free to lower income families, with other types of shelter appearing where these were not suitable, including further brick and concrete surface shelters, sandbagged structures and reinforcement of rooms and cellars. These, whether provided through the local authorities or on private initiative, advantageously dispersed protection across the community. Steel indoor Morrison table shelters were later supplied to many households. Hospitals and public services were required to provide their own shelters.[63]

Industry had to protect its workers, many of whom were key to the war effort. One of the largest industrial shelters was the still surviving tunnel system dug behind the Short's factory on Rochester's esplanade. Another but smaller example of a factory shelter survives at the rear of the former Sunlight Laundry, Richmond Road, Gillingham. Contemporarily,

provision of shelters on naval and military premises was expanded, with over 100 of them at Chatham Dockyard (some surviving) and a passive defence headquarters was established in the Brunel sawmill tunnel. Military shelters are known to survive at Kitchener Barracks and Maxwell Road, Brompton. Several gas decontamination buildings remain, at Lodge Hill, Upnor and at Chatham Dockyard.[64]

Expansion of gun and fighter defence **(Fig. 7)**

To improve protection against air attack, by the spring of 1940 the air defences in the district begun pre-war had been enlarged. In addition to the pre-existing 7 heavy anti-aircraft batteries (see above), were 2 more manned sites at Cooling and Lower Hope, with 4 unmanned reserve sites at Decoy Farm, Wetham Green, Gibraltar Farm and at Whitehall Farm, making 13 heavy batteries with a total of 52 guns; most were 3.7-in. weapons, with some 4.5-in. and the older 3-in. guns at Lower Hope and Cooling.[65] This substantial armament, which provided area defence against highflying targets, had its headquarters at Fort Luton, where there was an anti-aircraft operations room and at Fort Clarence at Rochester.[66] Many of the batteries came to be provided with fire control radars. Of these new batteries within the district, elements survive at Wetham Green, Gibraltar Farm and Dillywood Lane, with cropmarks at Lower Hope. There were, besides, lighter weapons at multiple locations for defence of four Vulnerable Points against lower flying aircraft:

Chatham Dockyard,
Chattenden ammunition stores,
Rochester airport,
Grain oil refinery and stores.

Listings for these in 1939/40 gave a total of over 100 guns, mostly Lewis machine-guns, with a smaller number of 3-in., 40mm Bofors and Hispano-Suiza guns.[67]

Reinforcing these were 2 x Z Batteries of multiple launchers for 3-in. anti-aircraft rockets at Lodge Hill and on Gillingham golf course. Balloon barrages were in place as an obstruction to enemy aircraft and there were many searchlight positions from which to illuminate the night sky.[68]

Rochester airfield was mainly a manufacturing site, especially for the new four-engine Stirling bomber, fighter protection being based at airfields elsewhere. However, it was designated as an emergency landing ground, with facilities for refuelling and rearmament. It was given ground defences against attack by paratroopers.[69] There were also networks of smoke projectors in the district to obscure visibility of the ground to air raiders.

A deception scheme of decoys to draw raiders away from real targets

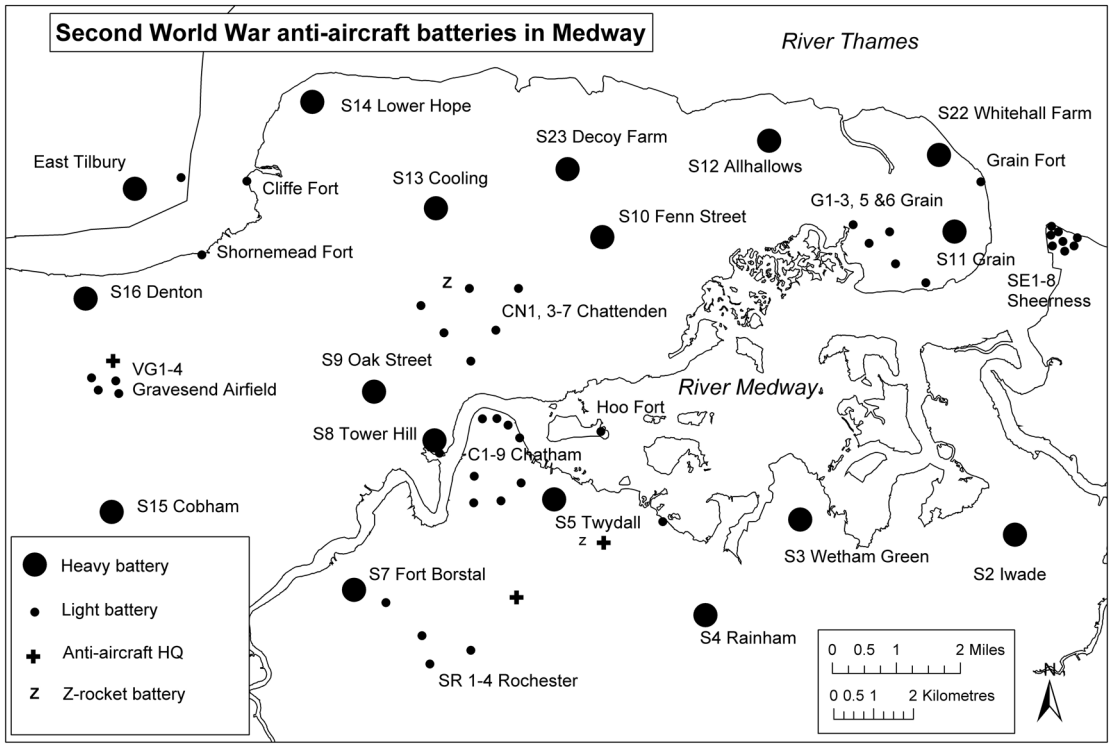

Fig. 7 Map of the Second World War anti-aircraft batteries in Medway District. Other temporary batteries were added in 1944 as part of the DIVER plan (V. Smith and P. Cuming 2010).

and to bomb false ones took the form of daytime duplicate sites and night-time ones which used lights and fires; sometimes these functions were combined. Rochester airfield's was at Capstone, south of Gillingham. RAF Gravesend's were on Cliffe Marshes and at Luddesdown. Decoys for Chatham naval base were at Nor Marsh and at Stoke, with an additional naval decoy at Lower Hope. A decoy for the oil refinery at Grain was at Allhallows.[70] Several control bunkers for these survive. Detection of approaching raiders was provided by long-range radar elsewhere and by ground observer posts within the district, with telephone communications to a command and control network.

River defences

Warships of Nore Command based on the Medway, reinforced by vessels drawn from elsewhere, would have handled defence against enemy naval forces in the Thames Estuary. A deep bombproof headquarters for the command was established at Chatham Dockyard. The River Medway and the basins of the dockyard were vulnerable to attack by mine laying aircraft. Posts from which to observe and report mines for disposal by the navy survive at Chatham Dockyard, Gillingham Strand and Fort Darnet.[71]

Pre-existing coastal batteries at Grain, Sheerness, Shoeburyness and, upstream in the Thames at East Tilbury, were the starting point for shore gun defence against both naval attack and invasion.[72] Of these only Grain was within Medway district. Within the district defences were soon added against torpedo boats in the twin-6pr. gun emplaced on the top of Grain Tower, cross-firing with similar guns at Sheerness. A boom defence was placed across the Thames between St Mary's Bay and Canvey Island in Essex, where another twin-6-pr. battery was built close to a battery for two 6-in. guns built in 1938. Cliffe Fort became a base for patrols by the Royal Naval Auxiliary Service;[73] several light weapons for local protection appear to have been mounted there.[74]

Whitehall Farm Battery at Grain was reactivated for about 18 months at the start of the war. Fire control systems were revised and coast defence radar introduced for longer-range detection of targets. By around 1942 the district became embraced within three fire commands – Thames, Medway and Counter bombardment, the latter being chiefly dependent on Fletcher Battery on Sheppey, the 9.2-in. guns at Grain Fort having been earlier withdrawn and replaced with 6-in. weapons These arrangements appear to have been largely unaffected by the *Ebbtide* reductions in coastal defences of that year.[75] An offshore observation minefield was controlled from a concrete tower on Grain's shoreline (**Fig. 8**).[76] Grain was considered vulnerable to glider or paratroop attack and commandos based at Plymouth were to be deployed there if an invasion appeared imminent.[77]

Fig. 8 The minefield control tower at Grain (V. Smith 1974).

Anti-invasion defences (**Fig. 9**)

The risk of German invasion seemed especially acute following the defeat of the Franco-British forces in France during June, 1940. As conceived by General Sir Edmund Ironside and later modified by General Alanbrooke, the general strategy for defence against any invading forces was to first oppose a coastal crust of resistance along possible invasion beaches and then to place a brake on their advance inland by the introduction of a succession of delaying 'tripwire' defences along roads, across country and in towns and villages where, as in the Medway district, roads converged. This was all intended to lead the enemy into prepared battlefields to the advantage of the defender.[78] Most elements of the defensive tripwire form of defence were established in the Medway district.

Impressive surviving lines of concrete pimples and square blocks extending inland from the beach on the north flank of the batteries at Grain symbolise the coastal crust element of anti-invasion defence. There were other (since vanished) anti-invasion blocks along the river's edge at Allhallows. From these there was a related line of pillboxes along the rising ground to High Halstow, some of which survive.[79] Based at Slough Fort at Allhallows were several truck-mounted naval guns providing a mobile response to invading forces. Areas of riverine marshes could be flooded as an impediment to enemy movement into the hinterland.[80]

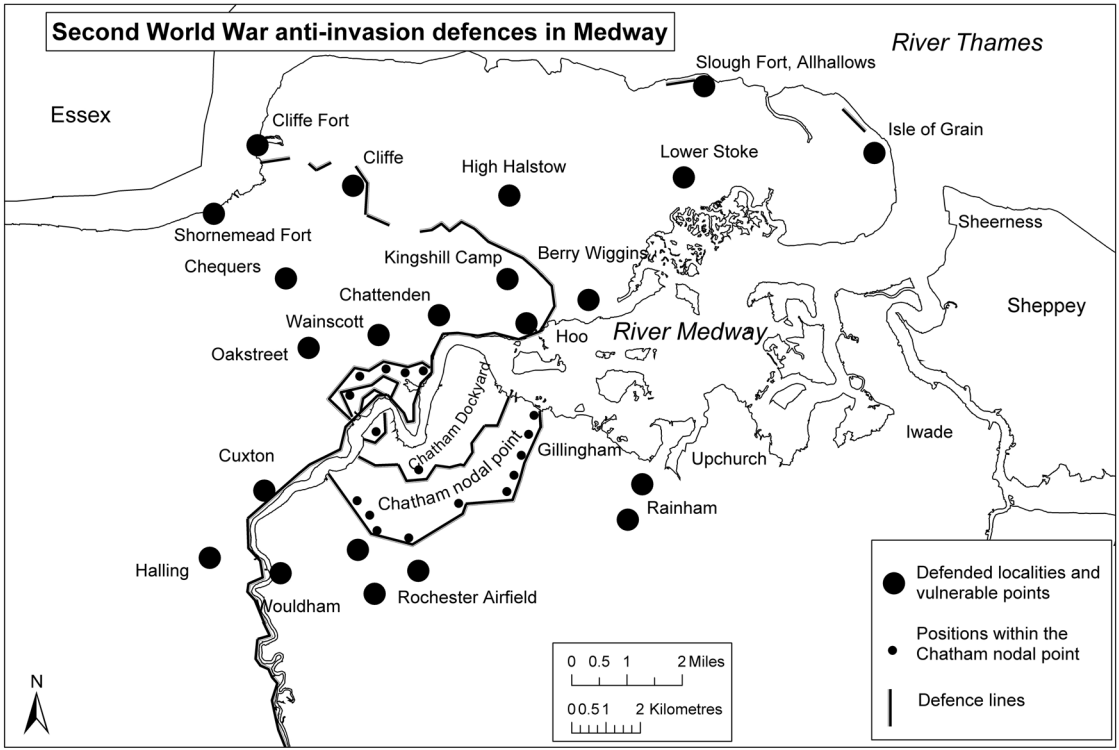

Fig. 9 Map of the Second World War anti-invasion defences in Medway. Subsidiary to these were other points of resistance (V. Smith and P. Cuming 2010).

The Allhallows-High Halstow pillbox line almost connected with the major strategic GHQ Line. This ran across southern England from the Bristol Channel to, and along, the left bank of the River Medway, diverging from it north at Hoo via the ammunition stores at Lodge Hill to the right bank of the Thames at Higham Creek. Thereafter it resumed from the left bank of the Thames to the industrial north. Within Medway district the GHQ Line was intended to impede an enemy crossing of the Medway from the south and/or an advance west from a landing in the Hoo Peninsula.[81] As part of this line interval pillboxes of both an infantry and an artillery type, having interconnecting fields of fire, ran along the left bank of the Medway and across the Hoo Peninsula where, in the absence of other obstacles, an anti-tank ditch was cut in front of them. This was angled in various ways, flanked by fire from the pillboxes.[82] Many pillboxes and some obstacle blocks remain, both along the Medway and across the Hoo Peninsula, memorialising this line. The anti-tank ditch is mostly traceable only in aerial photographs but there is a surviving 100-yard stretch in the north-west extremity of Gravesham, terminating in an echelon of concrete blocks on the bank of the Thames. There is a similar grouping on the riverbank at Hoo. There were, besides, numerous fieldworks, minefields, barbed wire entanglements and a miscellany of other type of defence.

Straddling the GHQ Line and enclosing Chatham's dockyard and the military barracks were the defences of the Chatham Nodal Point, a Class 'A' anti-tank island. Originating in 1940 and improved in 1941, this was intended to:

– block the way west to London over the Medway bridges between Rochester and Strood, and, as a corollary, to resist capture by German paratroopers intent on preventing their use for British reinforcement of the invasion zone

– enclose and impede progress of an enemy along the roads and railways which converged at this place and

– protect the Chatham naval and military base whose manpower, added to which was the Home Guard, provided the defending forces.

The nodal point was large, with 3 successive lines of defence:

– On the right bank of the Medway the *outer* line ran from Wickham Reach via Forts Borstal, Bridgewoods, Horsted, Luton, and Darland to Cinque Port Marshes and on the left bank of the river from just to the south of Temple Marsh via Salters Cross and Sole Street Farm to Upnor.

– On the right bank of the Medway the *middle* line was in an arc from Fort Clarence to Gillingham Strand and on the left bank from south of the Rochester Bridge at Strood via Brompton Farm and Wainscott to Whitewall Cement Works.

– The *inner* line was in two sections, firstly running along the rampart of Chatham Lines and secondly in an elliptical ring enclosing both ends of the bridges across the Medway at Rochester. Chatham Lines were strengthened with 2 naval guns mounted on the ramparts, weapon pits, pillboxes and anti-tank blocks. The Nore Command bunker was outside the inner lines and, therefore, it was given its own defensive perimeter.

The Nodal Point included over 20 strongpoints of either platoon or company strength, with minefields, hundreds of road blocks, fougasses, Blacker bombards and defended houses. It was supplied to resist for at least 7 days. In 1941 the fighting garrison totalled 5,270, combining Royal Navy, Royal Marines, army and Home Guard units. Surrender was forbidden.[83]

Survival of structures includes defence positions at Forts Horsted and Borstal, blocked loopholes in the parapet of a railway bridge over Station Road, Strood, concrete pimple obstacles at the inner Lines in Medway Road, a fougasse at Chatham and other positions at Fort Amherst. An alternative river crossing was established upstream at Wouldham, first as a floating bridge and then as a Bailey Bridge.[84]

In addition there were other centres of resistance, at rural road junctions and villages. Guns of anti-aircraft batteries could be depressed to fire on land targets of opportunity.[85] Ground considered suitable for the landing of enemy troop-carrying gliders and aeroplanes was obstructed, often by erection of posts and wires. As well as the defenders for the nodal point, availability of the Home Guard and regular troops at various points within the Hoo peninsula and along the Medway GHQ Line barrier probably added another 5,000 troops in the district. Triumvirates of civil, military and police representatives were established for control of communities under invasion conditions. These were designated for Chatham, Rochester, Gillingham, Hoo, Cliffe and at Halling.[86]

Other developments

Commensurate with the expanding global naval war there was a major expansion of activity at Chatham Dockyard, involving increasing production and repair, leading to an enlarged workforce and more buildings.[87] Construction slips for the Fairmile motor torpedo boat survive at Gillingham Strand.[88] A naval intelligence gathering radio interception 'Y' station established at Fort Bridgewoods pre-war was continued and expanded. Some related concrete bases survive nearby. Another 'Y' station established pre-war at Cooling was apparently discontinued after 1940. However, the secure radio station for transatlantic communication built about 100 yards south of it continued into post-war years. There are

a few structural traces.[89] A naval signal station was established on Beacon Hill, without leaving a trace, the present structure being post-war.[90]

Although there was a considerable military establishment at Chatham, the Royal Engineers training establishment was transferred to Ripon in 1940, allowing Brompton and St Mary's barracks to be taken over for accommodation by the Royal Navy. Parallel with this was the addition of hutted camps to allow an increase in the size of the garrison.[91]

Latter stages of the Second World War 1942-5

By the summer of 1943 Germany was itself under pressure from the pace of Allied offensives and the threat of invasion receded. In consequence, and under the national *Floodtide* orders of that year there were some reductions in the coastal defences of the Thames and Medway and, as elsewhere, anti-invasion defences including Chatham's nodal point, were reduced to a lesser state of readiness. By now the anti-tank ditch between Hoo and Higham Creek was seen as an impediment to farming and was recommended to be infilled.[92]

In national war priorities, emphasis began to shift from home defence to planning for the liberation of Europe. In Medway district preparations included the build-up, equipping and training of elements of the allied invasion force. This required additional accommodation space including use of Kings Hill camp at Hoo.[93] Arrangements were made for increased maritime traffic from the Port of London through the Thames estuary, embarkation hards were built in the Medway (and in the Thames) and the district was incorporated within wider schemes of deception which were devised to signal to the Germans a false intended landing point at Calais. The positioning of barges at places in the Medway (still remaining at Gillingham Strand) was apparently part of that. Real invasion hards, so far from the Normandy coast, but closer to Calais, at Upper and Lower Upnor and Cockham Wood must, conveniently, have helped reinforce this illusion.[94] These hards, with another outside the district on Thameside at Shornemead, may still be seen. The oil refinery at Grain was part of the Pipe Line Under The Ocean (PLUTO) scheme for supplying fuel to the allied armies once they had landed in France.

The optimism from the successful *Overlord* landings on 6 June was tempered by the shock of the German air campaign with V1 flying bombs, leading to the DIVER scheme for the massing of mobile anti-aircraft guns as a defence, of which there were numerous sites in the Hoo Peninsula as part of the DIVER Box.[95] Then followed the launching at England of V2 rockets, which could not be intercepted. All this confounded the recent downsizing of civil defence. But by the turn of 1944 the V-weapon offensive had greatly reduced as launching sites had been bombed or captured. The Allied land offensive moved steadily on to what was seen as a certain

victory in Europe. The decommissioning of the home defences raced on. Anti-invasion defences were abandoned completely and soon also was civil defence, with a start made on disposal of buildings, vehicles and equipment. Under the *Neaptide* orders of September 1944, the Thames and Medway coastal defences were placed into care and maintenance, except for Fletcher Battery on the Isle of Sheppey. Even that was reduced to this status by February 1945.[96]

A poignant reminder of the role of Chatham naval base in the war effort is the prominent war memorial in the Great Lines, commemorating the naval dead of both wars from Chatham-based ships.

Air raiding of the district during the Second World War

There were over 1,300 air raid alerts in the Medway district during the Second World War but a significant proportion of these were general alerts covering air activity over a wider area. At the start of the war workers at the Chatham naval base were required to take shelter on receipt of an alert but this was so disruptive that orders were given to continue their work until an immediate danger signal was sounded. During the course of the war 2,783 high explosive, 60 oil and 24,421 incendiary bombs were dropped across Medway district, causing 187 deaths, 1,096 injured in varying degrees as well as the destruction of 657 houses, 2,135 severely damaged and 26,230 lightly damaged. Many bombs were not precisely directed and retreating aircraft unloaded numbers randomly, over both rural and urban areas. Raids in the district took place in late 1940 and the spring of 1941, 1943 and 1944. Although these included the bombing of Chatham Dockyard (including against HMS Ajax in 1940) and industrial sites, this was more desultory rather than a focussed and determined campaign to destroy these assets. A small number of V weapons fell in the district in 1944/5. The war diary of Medway civil defence group control contains a helpful day-by-day record of air raid alerts and bombing incidents during the Second World War.[97]

The Cold War 1946-90

The end of the Second World War gave a brief respite before the Soviet Union posed a new threat and the Cold War began, resulting in defence planners having to consider the possibility of an attack and the need for countermeasures.[98] Coast defence was, in a small way, revived, the Thames and Medway being considered vulnerable to an amphibious raid or to a sabotage attack. But only one site in Medway district – Grain Fort – was reactivated, with several batteries on Sheppey being brought back into service and two on Canvey Island (Essex).[99] For a time the Home Guard was reformed.[100] Anti-aircraft defence was also reconstituted. Under the

Nucleus scheme of 1946, the batteries at Gibraltar Farm,(S6), Tower Hill (S8), Fenn Street (S10) and Allhallows (S12) Wetham Green (S3) and Whitehall farm (S 22) were designated for continuation. Following the *Igloo* scheme of 1950, a new anti-aircraft operations room was added to Fort Bridgewoods. This was to coordinate 9 batteries which, within the district, now included just Gibraltar Farm and Fenn Street.[101] At the latter a new command post was built in a nearby field. Although reliant for warning of an attack from radar, a network of ground observation posts reporting to a Group Headquarters at Maidstone was re-established, structures being built within the district at Allhallows, Cliffe and Hoo.[102] For the reasons explained in Part 1, coastal and anti-aircraft gun defence were discontinued after 1956.

The military garrison at Chatham continued, even with expansion of training facilities at Chattenden Barracks and at Lodge Hill where what came to be called the Defence Explosives Ordnance Disposal School was created. The fate of the naval presence was different. In the early 1950s Melville Hospital (which had become a barracks) and the Royal Marine Barracks were abandoned. A White Paper of 1957, instigated a continuing and steady decline of naval activity in the Medway, seeing the closure of the naval armament establishments, Chatham Gun Wharf and the Isle of Grain fuel depot, and indeed, the cessation of Nore Command itself, which, until 1957, had been operated jointly with the RAF. After that year the Nore Command bunker became used by the Royal Navy Reserve and as a protected communications centre, maintained into the early 1980s.[103]

Even the addition of facilities for refitting nuclear submarines did not save the dockyard, which closed in 1984, with naval personnel being withdrawn. A presence by the Royal Navy Auxiliary Service was however retained until the early 1990s, having been earlier re-roled from mine watching to responsibilities concerned with inshore convoy activity and harbour security. Following the earlier and final demise of the Home Guard in 1956, the Territorial Army retained an earmarked role for home defence.[104]

As elsewhere, civil defence was revived from 1948, gaining an enhanced imperative after 1949 when the Soviet Union acquired atomic weapons.[105] Chatham's naval base and military facilities were prime targets for nuclear attack.

The process to rebuild civil defence began with recruitment to the reformed Civil Defence Corps, providing similar services and having analagous facilities to those which had existed in the Second World War. Yet despite the scope for greater damage from air raids in the nuclear age, this was on a smaller scale. With this went new command and control, for which its bunkers had to be resistant to atomic blast and radioactive fallout.[106] As part of a national network of regional war rooms for civil

defence, a sub-regional control for London was established at Fort Bridgewoods in 1957.[107] This adapted the pre-existing and now redundant anti-aircraft gun operations room. Although active consideration was given to the councils of Strood, Rochester, Chatham and Gillingham having their own local controls, this progressed uncertainly. Arrangements at various council premises appear to have been made on at least a temporary basis but the only certain knowledge relates to a new control being built in 1954 beneath the rear car park of the council's offices in Canterbury Street, Gillingham.[108] This had control rooms separately for Gillingham itself and, collectively, for the councils of the Medway towns. A civil defence training centre was built at the former Gun Wharf at Chatham in 1965 (demolished in 2006) and the pre-existing civil defence buildings at Strood Hill (demolished in the later 1970s) appear to have been utilised for a time. Local garaging for civil defence vehicles was in now blocked tunnels at the bottom of Chatham Hill, Chatham. As in the Second World War, an auxiliary fire service was formed, with bays for its engines added at new public fire stations, examples surviving at Medway Fire Station in Watling Street, Chatham.[109] Public utilities had their own civil defence, including at the oil refinery at Grain. Chatham dockyard also had its own civil defence organisation. Electrically operated air raid sirens in urban areas and sometimes hand-operated ones in rural areas warned people of an impending attack.

The unprecedented new risk was of the spread of deadly radioactive fallout from exploding nuclear weapons, whether delivered by aircraft or later by guided missiles. From the later 1950s/early 60s this led to the establishment of a national network of underground monitoring posts to plot nuclear explosions, to monitor the spread of radiation, and to report to the group headquarters at Maidstone which would initiate fallout warnings to the population. Posts were built to supersede the pre-existing and now redundant aircraft spotting posts at Allhallows, Cliffe and Hoo.[110]

During the balance of payments crisis of 1967-8, the Civil Defence Corps and auxiliary fire service were stood down. Civil defence rapidly went into the doldrums, although local authorities remained responsible for planning for handling the effects of war on their communities. In the local government reorganisation of 1974 Strood and Rochester's councils amalgamated but liaised with Chatham and Gillingham in civil defence matters for the Medway towns. Against the background of a perceived increased Soviet threat and following the Home Defence Act of 1980, councils were encouraged to build or refurbish bunkers and to provide communication links to county controls. Between 1985-90 Gillingham's bunker was refurbished and a new one built at Strood.[111] Parallel with this was the formation of the Community Emergency Volunteers but in the Medway district there was a lack of enthusiasm for joining. Community halls were, nevertheless, earmarked as rest and emergency feeding centres.[112]

After the end of the Cold War in 1989/90 the tempo of planning for the effects of war lessened but local authorities continued with this for several more years. The bunker at Strood remained available for coordination of responses to civil contingencies. At Gillingham such activity shifted to the rooms of the adjacent council offices. From 1998 a new unitary authority for the whole of the Medway towns handled contingency planning. This now includes the new risk of attack from international terrorism.[113] A military presence remains and the Royal School of Military Engineering will receive enhanced facilities although the Defence Explosive Ordnance Disposal School will move from the district in 2010 (P. Kendall, pers. comm. 2010).

Summary and conclusion

Since modest beginnings in the sixteenth century the presence of one, and by the seventeenth century, two naval dockyards and bases had conferred a vital national strategic significance upon the Medway. This had required the provision of defences to protect the river approaches to them as well as the construction of military barracks and continuous lines around the landward sides of these assets. There was also a need to deny enemy access to the lower river crossing at Rochester but this had not been given adequate effect until the Napoleonic Wars, when fortifications were built on or near the road approaches. By the mid-nineteenth century a requirement was identified to protect points of entry to the Hoo Peninsula which might be used for a flanking attack on the naval assets at Chatham. At the same time the emergence of the threat of the new French steam ironclads armed with rifled muzzle-loading guns led to massive reorganisation and modernisation of the national defences, including those of the Medway and the Thames. Contemporarily, Chatham dockyard was expanded to meet part of the construction needs of Britain's own ironclad navy. The Chatham ring fortress built in the second half of the 19th century strengthened the defence of the land approaches to the dockyard and naval base and to the river crossing at Rochester. Parallel with this, the appearance of improved armoured steam warships armed with powerful breech-loaders in the navies of the European powers led to the further modernisation of the shore defences, and an emphasis on forward defence by heavy long-range guns. By the 20th century arose another defensive imperative, this time in the form of a need to defend against attack from the air. The defences of the Medway reached the peak of their extent and effectiveness during the two world wars. This was represented in the defensive concentrations in and around the naval and military bases, in the lines of resistance across the Hoo Peninsula and in outlying points of protection on the coast. The post-war years were, in comparison, an anti-climax, with a rapid reduction of the defences

and, despite the Cold War, the closure of Medway's naval bases and a diminution of the military establishment.

The defence heritage asset

Having for over 400 years been the setting for two naval bases crucial to Britain's protection, the significance of the Medway was akin to that of the great naval centres at Portsmouth and Plymouth, but with the added importance of Chatham being a key defensive position on the route for an invader advancing on London from the Kent coast. This gave the district a unique national place. Indeed, taking into account the Medway as a whole, with the inclusion of sites in Swale district at Sheerness and elsewhere on Sheppey, the area displays an important range of defensive structures. Their chronology and typological range spans a period of 900 or more years, each stage of development demonstrating variously continuity and change.

Of the 1,601 sites which the surveyors identified in Medway District as having been built or utilised in the twentieth century, 1,144 were of a military nature and 457 related to civil defence. More survey is needed to establish the full extent of survival. Despite post-Second World War demolitions, often deriving from schemes of development or infrastructural improvement, many 20th century sites remain. The continued existence, visibility and perhaps public access to some of them would have a key value for interpreting this heritage resource. A number will require statutory protection to ensure their survival. There is also considerable scope for further research and for the recording of remaining sites.

Although of national importance, the works of the Chatham ring fortress, whose life extended into the 20th century, have been little surveyed and more needs to be done to ensure the availability of a more complete historical record of them. Because of their architectural and tactical distinctiveness, some level of public viewing access would be merited.

Of the coastal and riverine defences the same lack of adequate survey and report exists for Cliffe Fort and for Slough Fort at Allhallows, to which public access would also be merited. The complex of defences at Grain, including a covered way, have been extensively surveyed by English Heritage but may not have reached the limits of the possibilities for investigation, particularly in relation to Whitehall Battery. These defences, which present largely as earthen banks and ditches, lend themselves to trail access and the placement of interpretation panels. A pressing need is to survey the small boom batteries at Lower Hope and, just outside the district, on Burntwick Island, before their slight remains disappear from active tidal erosion.

The buildings of Chatham Dockyard and the naval base are largely outside the scope of this report but these also appear not to have reached

the limits of research. Public historical access is predominantly to the earlier part of the dockyard. The basins and areas of dockyard extension and which had prominence during the 20th century are nonetheless visible outside its perimeter and within the area known as Chatham Maritime. Pembroke Barracks survives impressively within the campus of a consortium of universities. Within the historic dockyard are numerous Second World War air raid shelters and a decontamination centre. Outside in the dockyard extension are several small First World War pillboxes and, in a military area, HMS Wildfire, the underground headquarters for Nore Command, fortunately surveyed before it was recently sealed. The role and significance of the Chatham Dockyard and naval base during the twentieth century might benefit from an enhanced focus in interpretation and in the highlighting of civil defence structures within the visitor areas of the historic dockyard. Slipways for the building of Second World War Motor Torpedo Boats at Gillingham Strand and features of similar date at Gillingham Pier need investigation and recording.

On the left bank of the Medway the naval magazines are of considerable historic interest. Those, which were part of Upnor Castle, also need investigation and recording. The later nineteenth century magazine establishment at Lodge Hill has been savagely mutilated by demolition and will be largely obliterated by development but it is currently being surveyed and recorded. There is uncertainty about the Chattenden magazines nearby which may similarly be at risk of redevelopment. These will also require surveying and recording. Perhaps one of the magazines could be selected for statutory protection and for community use within any new development. The naval ammunition railway, which connected the magazine sites to Upnor, would merit detailed investigation. A number of First World War pillboxes survive at Lodge Hill and Chattenden. Because of their rarity value they should be awarded statutory protection. From the Second World War or the Cold War remains an interesting complex of shelter tunnels under the former Beacon Hill naval radio station, which would justify exploration and survey.

Anti-invasion defences figured strongly in the district during both world wars. The First World War trenches, which were cut as adjuncts to the batteries at Grain and Slough, are likely to have left some archaeological traces. Likewise the more extensive trench systems joining and in front of the works of the Chatham ring fortress and the redoubts and trenches near Lodge Hill, with a rare surviving pillbox at Beacon Hill. These systems need documentary and field investigation as well as plotting. The Second World War has left a more prolific signature of anti-invasion defences with possibilities for viewing access. Not only are there GHQ line pillboxes along the left bank of the Medway, both within and outside the district, but there is a line of others across the Hoo Peninsula from Hoo St. Werburgh to Higham Creek, with a spur at Allhallows and beach line anti-

tank obstacles at Grain. Although the 6-mile long anti-tank ditch across the Hoo Peninsula has been mostly infilled, it exists archaeologically in farmland and a short stretch survives just outside the district at Higham Creek. Of the defences of the inner part of the Chatham Nodal Point are a miscellany of remnants variously at Strood, in front of Chatham Lines and at Fort Amherst. All could be packaged as a trail. In reinforcement of the knowledge of these more obvious and visible reminders of Second World War anti-invasion defence, there needs to be greater investigation of the proliferation of the not so obvious lesser points of resistance which may also have left archaeological traces, however elusive.

The earlier Brompton and Kitchener Barracks need investigation for the probable presence of twentieth century structures, including Second World War air raid shelters.

Fieldwork possibilities exist for investigation of the 15 First World War anti-aircraft batteries known to have existed within the district. Most if not all, had guns on permanent mountings and, therefore, may have left traceable archaeology. A site with upstanding remains is at Lodge Hill (recently surveyed by English Heritage) and there are traces of another in the Lower Lines at Gillingham. In the Second World War there were 31 anti-aircraft batteries in Medway District (13 heavy and 20 light) and about 20 other temporary light batteries established in 1944 as part of the DIVER Box. Heavy batteries have suffered many demolitions and only the battery at Fort Borstal survives complete, others retaining components, either gun emplacements or their domestic areas. On Cliffe Marshes are crop marks of the distinctive trapezoidal layout of gun emplacements. Of the light batteries, emplacements survive at Rochester airport, Cliffe and Hoo Forts. Others may survive as infilled gun pits in fields, potentially available for archaeological investigation.

There might be some residual archaeology from the First World War Royal Naval Air (airship) Station at Kingsnorth and at the other for aircraft at Grain. Plan evidence exists from which to undertake field investigation. There are certainly a number of buildings at Rochester airfield from its use during the Second World War. This site needs survey and historical evaluation. There has been little research of the Second World War decoy sites for Rochester and Gravesend airfields, Chatham naval base and Grain's oil refinery. As well as several control centres for them there may be other archaeology to be found.

Documentary research probably still has much to tell us about the pattern of civil defence in the district which has yet to be fully revealed. Surviving assets, including at Chatham dockyard, need plotting and survey. There is also the Civil Defence Group Control at Fort Amherst, a shelter tunnel at Cuxton/Halling and industrial shelter tunnels for the former Shorts factory at Rochester.

Apart from the command bunkers in the naval and military areas the

main surviving features from the Cold War are the civil defence control centres at Gillingham and Strood, with Royal Observer Corps radiation monitoring posts at Cliffe, Hoo and Allhallows. The intended and actual civil defence infrastructure in the district during the Cold War is imperfectly known and needs additional research.

ACKNOWLEDGEMENTS

The writer and the surveyors thank the Heritage Group of Kent County Council for commissioning this survey and the European Union for their generous financial support. The following institutions generously made available their archives: the Centre for Kentish Studies, Chatham Public Library, the English Heritage National Photographic Archive, the Heritage Conservation Group of Kent County Council, Medway Studies and Local Study Centre, Medway Military Research Group, the National Archives, the Royal Engineers Library and Museum and the Royal Marines Museum. Gratitude is also expressed to the landowners who were most helpful in providing entry to sites, in particular the Fort Amherst Heritage Trust and the Royal Engineers. The surveyors would also like to acknowledge the value of access to the information about defence sites left by the late Reginald Cox and the late Reginald Curtis. Finally, the writer thanks Dr Paul Cuming, Peter Dawson, Keith Gulvin, Peter Kendall and Edward Sargent for reading and commenting on a draft of this text.

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